

CLAIMS

1. A dielectric barrier discharge lamp lighting device for driving a dielectric barrier discharge lamp having an inner electrode and an external electrode, comprising:

a transformer that includes a primary coil and a secondary coil, and supplies a driving voltage to the dielectric barrier discharge lamp from the secondary coil; and

a driving circuit that controls an input voltage to the transformer to supply the driving voltage with a driving frequency f_d to the dielectric barrier discharge lamp,

wherein a self-resonant frequency f_r of the secondary coil, which is measured with the primary coil of the transformer being open, is equal to the driving frequency f_d or a frequency in the vicinity of the driving frequency f_d .

2. The dielectric barrier discharge lamp lighting device according to claim 1, wherein the self-resonant frequency f_r is set to satisfy $0.9f_d \leq f_r \leq 1.3f_d$.

3. The dielectric barrier discharge lamp lighting device according to claim 1, wherein the self-resonant frequency f_r is set to satisfy $0.95f_d \leq f_r \leq 1.25f_d$.

4. The dielectric barrier discharge lamp lighting device according to claim 1, wherein the self-resonant

frequency f_r is set to satisfy $1.0fd \leq f_r \leq 1.2fd$.

5. The dielectric barrier discharge lamp lighting device according to any one of claims 1 to 4, wherein the
5 driving voltage is a voltage having a substantially rectangular waveform.

6. The dielectric barrier discharge lamp lighting device according to any one of claims 1 to 4, wherein the
10 driving circuit includes a push-pull inverter.

7. The dielectric barrier discharge lamp lighting device according to any one of claims 1 to 4, wherein the driving circuit includes a half-bridge inverter.